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WASHINGTON STATE BUILDING CODE COUNCIL
APPLICATION FOR REVIEW OF A PROPOSED LOCAL AMENDMENT TO THE WASHINGTON STATE BUILDING CODE

1. State Building Code to be Amended.

[X] International Building Code	[ ] Ventilation and Indoor Air Quality Code
[ ] International Residential Code	[ ] International Mechanical Code
[ ] ICC ANSI A117.1 Accessibility Code	[ ] International Fuel Gas Code
[ ] International Fire Code	[ ] NFPA 54 National Fuel Gas Code
[ ] Uniform Plumbing Code	[ ] NFPA 58 Liquefied Petroleum Gas Code
[ ] State Energy Code	
Section Many	**Page** Many

2. Type of Local Amendment

[ ] Preproposal	**[X] Final Adoption**	**[ ] Reconsideration**

3. Applicant:

City of Seattle Department of Planning and Development

4. Local Jurisdiction Adoption

121519	July 16, 2004
Ordinance or Resolution No.	Date Adopted

5. Signed:

_____	Principal Engineer	_____
Proponent: Jonathan Siu	Title	Date

6. Contact Person:

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Revised 8/04

7. Proposed Code Amendment

Code IBC **Section** Many **Page** Many

All of Seattle's residential amendments to the IBC are presented on this form. Sections 7 and 8 of the form are repeated for each of the amendments. It begins with an explanation of rationales that apply to all or many of the amendments. A more detailed, item-by-item presentation of the amendments follows.

8. Background information on amendment.

Local government residential amendments submitted to the Council for approval should be based on:

(1) Climatic conditions unique to the jurisdiction.
(2) Geologic or seismic conditions unique to the jurisdiction.
(3) Environmental impacts, such as noise, dust, etc., unique to the jurisdiction.
(4) Life, health or safety conditions unique to the jurisdiction.
(5) Other special conditions unique to the jurisdiction.

General Background. Seattle is unique in the state for several reasons pertinent to the issues presented in these code amendments:

- Under the Growth Management Act, Seattle has made a strong commitment to accept population density. According to the 2000 Census, the average density of population in Seattle was 6,717 people per square mile, an increase of 562 per square mile since 1990. Based on 2004 estimated population, the density has increased to 6,817 people per square mile.

- Much of the new residential development in Seattle occurs on "infill" lots—sites that are more difficult on which to build because they are small, irregularly-shaped, steeply-sloped, or with buildings very near the property line on the adjacent lot. Many sites have restrictions on the location of buildings, such as steep slopes and riparian corridors.

- Another factor that distinguishes Seattle from many smaller jurisdictions is the city's ability to deliver fire protection service—Seattle Fire Department's average response time for fire, rescue and hazardous materials calls in 2004 was 4.6 minutes.

- Seattle has a large number of rental housing units, and has had minimum standards for rental housing since approximately 1959. Seattle has always coordinated the regulations for new construction with the Housing and Building Maintenance Code (HBMC), which provides minimum standards for rental housing. This practice adds assurance that housing will comply with the HBMC if it is converted to rental. Several of the code amendments have been adopted for that purpose.

- Seattle's minimum housing standards have become even more important since Seattle is providing greater density of housing under GMA. Minimum standards help prevent the development of slum-like conditions in the city.

- Seattle has a long history of amending the construction codes. The first Seattle Building Code was adopted in 1889 or earlier, long before there was a model code. Many of Seattle's amendments have been in effect since before the State Building Code was first adopted.

- Local jurisdictions have authority to approve modifications and alternate materials, design and methods of construction and to interpret the code. (See IBC Section 104.10 & 104.11.) Seattle has a policy of including with the code as many of the recurring alternates and interpretations as possible so that all permit applicants can know about them.

- Seattle's amendments are reviewed by a public advisory board consisting of 13 members representing building professions and the general public. This Board, the Construction Codes Advisory Board, reviews each section of the code, and its member often propose amendments. The Board has reviewed and approved each of Seattle's amendments.

- Finally, Seattle takes pride in the qualifications of our staff, the quality of work done by our staff, and their ability to exercise judgment in devising code provisions and in applying the codes to permit applications. We employ ten structural engineers as plan reviewers. Building plans examiners, who review less complicated applications, are required to have a bachelor's degree in architecture, construction technology or a related field plus two years of related experience before they can be hired. In addition, staff participates actively in development of the model codes. We believe this participation gives us a more in-depth familiarity with the rationale behind the model code provisions, and gives us insights into how to improve the model codes.

Amendment #1

7. Proposed Code Amendment

Code IBC Section 202; 502.1 Page 20, 73

Section 202: STORY ABOVE GRADE PLANE. Any story having its finished floor surface entirely above grade plane, except that a basement shall be considered as a story above grade plane where the finished surface of the floor above the basement is:

1. More than 6 feet (1829 mm) above grade plane;
2. More than 6 feet (1829 mm) above the finished ground level for more than 50 percent of the total building perimeter; or
3. More than 12 feet (3658 mm) above the finished ground level ((~~at any point~~)) for more than 25 feet (7620 mm) of the perimeter. Required driveways up to 22 feet (6706 mm) shall not be considered in calculating the 25 foot distance if there is at least 10 feet (3048 mm) between the driveway and all portions of the 25-foot area. See Figure 502.1.

Section 502.1: BASEMENT. That portion of a building that is partly or completely below grade plane (See "Story above grade plane" in Section 202). A basement shall be

considered as a story above grade plane where the finished surface of the floor above the basement is:

1. More than 6 feet (1829 mm) above grade plane;
2. More than 6 feet (1829 mm) above the finished ground level for more than 50 percent of the total building perimeter; or
3. More than 12 feet (3658 mm) above the finished ground level ((~~at any point~~)) for more than 25 feet (7620 mm) of the perimeter. Required driveways up to 22 feet (6706 mm) shall not be considered in calculating the 25 foot distance if there is at least 10 feet (3048 mm) between the driveway and all portions of the 25-foot area. See Figure 502.1.

8. Background information on amendment. Seattle is a hilly city with many unusually-shaped building lots. The amendments to these definitions accommodate the local topography better than the IBC provisions. These amendments allow more dense development on hilly sites without increasing the fire hazard. The amendments are especially helpful for sites on which one corner is lower than the others. Because of the cost of land, many residential developments in Seattle have below-grade parking. Without these amendments, driveways into below-grade parking on sloped sites would cause the basement parking to be counted toward the building's story limits.

Amendment #2

7. Proposed Code Amendment

Code IBC Section 420.1 & 420.2 Page additional page following Chapter 4

420.1 Walls of dwelling units and sleeping units. Walls separating dwelling units in the same building, and walls separating sleeping units in Group R-1 hotel occupancies, R-2 occupancies and I-1 occupancies shall be constructed as fire partitions complying with Section 708.

420.2 Soffits of dwelling units and sleeping units. Roof-ceiling soffits in dwelling units and sleeping units shall be provided with a minimum of 1/2-inch gypsum wallboard in buildings of Types IIB, IIIB and VB construction.

8. Background information on amendment. Section 420.1 does not impose an additional requirement on dwelling units—it merely restates a requirement that is found in an inconspicuous location in Section 708 of the IBC. Section 708.1 requires a fire barrier between dwelling units. Most of the other sections of Chapter 7 contain requirements for how fire-resistance-rated building elements are to be constructed, and rely on other chapters for scoping provisions. Section 708, however, also contains this one scoping provision stating where the rating is required. Because of this anomaly, Seattle has repeated the requirement in Chapter 4 to be more consistent with the format of the rest of the IBC, and to decrease the likelihood that this important provision will be overlooked by building designers. Section 420.2 is a further clarification of the separation requirement.

Amendment #3

7. Proposed Code Amendment

Code IBC Section 420.3 Page additional page following IBC Chapter 4

420.3 Security from criminal activity in Group R.

420.3.1 Group R Occupancies other than One- and Two-family dwellings.

420.3.1.1. General. Section 420.3 applies to all housing units except one- and two-family dwellings.

420.3.1.2. Definition. For the purposes of this section, "housing unit" is any dwelling unit or guest room.

420.3.1.3. Building entrance doors and locks. Building entrance doors shall be without openings and shall be as capable of resisting forcible entry as a flush solid core wood door 1-3/8 inches thick.

EXCEPTIONS:

1. Building entrance doors may have visitor-observation ports which do not impair the fire resistance of the door.
2. Main entrance doors may be framed or unframed non-shattering glass, framed 1/4-inch plate glass or other security glazing.
3. Building entrance doors other than main entrance doors may have glazed openings. Glazed openings shall have wire, grilles or security glazing to prevent operation of the door latch from outside by hand or instrument.

Building entrance doors shall be self-closing, self-locking and equipped with a dead-locking latch bolt with at least a 1/2-inch throw which shall penetrate the striker at least 1/4 inch.

EXCEPTIONS:

1. Building entrance doors that open directly into a housing unit shall comply with Section 420.3.1.5 below.
2. Garage-to-building doors need not be self-locking when the garage-to-exterior door is equipped with an electrically-operated remote control device for opening and automatically closing.
3. When either the garage-to-exterior doors or garage-to-building doors are equipped for self-closing and self-locking, the other need not be so equipped.

420.3.1.4. Locks. All exit doors, including those from individual housing units, shall be openable from the interior without use of keys or special knowledge or effort.

420.3.1.5. Housing unit doors and locks. Doors from interior corridors to individual housing units shall not have glass openings and shall be as capable of resisting forcible entry as a flush solid core wood door 1-3/8 inches thick.

Every entrance door to a housing unit shall have a dead bolt or dead-locking latch bolt with at least a 1/2-inch throw which penetrates the striker not less than 1/4 inch. In hotels and other multi-unit buildings that provide housing for rent on a daily or weekly basis, every entrance door to a housing unit shall also be provided with a chain door guard or barrel bolt on the inside.

420.3.1.6. Observation ports. Every entrance door to a housing unit, other than transparent doors, shall have a visitor-observation port. The port shall not impair the fire resistance of the door. Observation ports shall be installed not less than 54 inches and not more than 66 inches above the floor.

420.3.1.7. Non-exit doors. Doors to storage, maintenance and building service rooms shall be self-closing and self-locking.

420.3.1.8. Sliding doors. Dead bolts or other approved locking devices shall be provided on all sliding doors. These locks shall be installed so that the mounting screws for the lock cases are inaccessible from the outside.

420.3.1.9. Windows. Openable windows shall have operable inside latching devices.

EXCEPTION: Windows whose sills are located 10 feet or more above grade, or 10 feet or more above a deck, balcony or porch that is not readily accessible from grade except through a housing unit need not have operable inside latching devices.

420.3.1.10. Alternate security devices. Subject to the approval of the building official, alternate security devices may be substituted for those required by this section if they have equal capability to resist illegal entry. The installation of the device must not conflict with other requirements of this code and other ordinances regulating the safety of exiting.

420.3.2 One- and Two-family dwellings. One- and two-family dwellings shall comply with Section 420.3.2

420.3.2.1. **Building entrance locks.** Building entrance doors, including garage doors, shall be capable of locking. They shall be equipped with a dead-locking latch bolt with at least a 1/2-inch throw which penetrates the striker not less than 1/4 inch. Building entrance doors shall be openable from the inside without use of a key or special knowledge or effort.

EXCEPTION: Garage-to-exterior doors may be equipped with an electronically-operated remote control device for opening and closing in lieu of a dead-locking latch bolt. When garage-to-exterior doors are equipped with remote control devices, garage-to-building doors need not be capable of locking.

420.3.2.2. Observation ports. Every building entrance door, other than garage doors, shall have a visitor observation port or glass side light. Observation ports shall be installed at a height of not less than 54 inches and not more than 66 inches from the floor.

420.3.2.3. Windows and sliding doors. Dead bolts or other approved locking devices shall be provided on all sliding doors and openable windows. The lock shall be installed so that the mounting screws for the lock case are inaccessible from the outside.

EXCEPTION: Windows whose sills are located 10 feet or more above grade, or 10 feet or more above a deck, balcony or porch that is not readily accessible from grade except through a housing unit need not have operable inside latching devices.

420.4.4. Alternate security devices. Subject to the approval of the building official, alternate security devices may be substituted for those required by this section.

Alternate devices must have equal capability to resist illegal entry. The installation of the device must not conflict with other requirements of this code and other ordinances regulating the safety of exiting.

8. Background information on amendment. This amendment, with some revisions, has been in the Seattle Building Code since 1979. It is coordinated with provisions in the Seattle Housing and Building Maintenance Code (HBMC) which sets minimum standards for rental housing in Seattle. The City has adopted standards for security that it believes provides residents minimum protection from intruders in their homes while providing for safe egress in case of fire.

Amendment #4

7. Proposed Code Amendment

Code IBC Section 702 Page 85

702.1 Definitions. The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

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FIRE SEPARATION DISTANCE. The distance measured from the building face to the closest interior lot line, to the ((~~centerline~~)) opposite side of a street, alley or public way, or to an imaginary line between two buildings on the lot. The distance shall be measured at right angles from the face of the wall.

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8. Background information on amendment. Because Seattle's Land Use Code requires larger setbacks than the IBC in single-family zones, this amendment has little affect on most small residential buildings.

This amendment not only recognizes that Seattle is a dense city, but it also responds to the historic fact that most alleys in Seattle are 16 feet wide. The provision in the IBC is based on the premise that streets and alleys are 20 feet wide; many of the provisions related to fire separation distance apply at distances of 10 or 20 feet or less. For example, the stringency of the provisions of Tables 602 and 704.8 decrease at a fire separation distance of 10 feet, and decrease again at a fire separation distance of 20 feet.

The amendment also allows slightly greater density of development in Seattle that we believe is justified by the superior performance of the Seattle Fire Department.

Amendment #5

7. Proposed Code Amendment

Code IBC Section 707.15 Page 95

707.15 Chimneys and fireplaces. Unless exposed to the exterior in an approved manner, approved factory-built chimneys shall be enclosed in fire-resistive shaft construction as required for the building construction type. Approved chimneys serving multiple dwelling units may be installed within the same shaft, provided approved metal

draft stops are installed at each floor level. All combustible construction shall be protected as required for fire-resistive shaft construction. Interior shaft wall joints shall be fire-taped when required and when space allows, but fire-taping may be omitted from joints on the final closure wall provided the joints are installed in a tight manner.

The back of listed manufactured fireplace boxes may replace that portion of the shaft wall where they are located, provided the joint between the box and the adjacent shaft wall is tightly constructed and installed according to manufacturer's specification. Fresh air make-up ducts required by the Energy or Mechanical codes may penetrate the shaft at the fire box. Fresh air make-up ducts which pass through any portion of the building other than the shaft shall be at least 26 gage metal.

8. Background information on amendment. This amendment provides a standard code alternate that Seattle believes is roughly equivalent to the provisions of the IBC, and is a practical, buildable method of chimney construction. It is similar to a pre-approved construction detail.

Amendment #6

7. Proposed Code Amendment

Code IBC Sections 712.3 Page 97-98

712.3 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers, smoke barrier walls, and fire partitions shall comply with this section.

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712.3.2 Membrane penetrations. Membrane penetrations shall comply with Section 712.3.1. Where walls and partitions are required to have a minimum 1-hour fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Steel electrical boxes that do not exceed 16 square inches (0.0103 m^2) in area provided the total area of such openings does not exceed 100 square inches (0.0645 m^2) for any 100 square feet (9.29 m^2) of wall area. Outlet boxes on opposite sides of the wall shall be separated as shown:
    1.1. By a horizontal distance of not less than 24 inches (610 mm);
    1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose fill, rockwool or slag mineral wool insulation;
    1.3. By solid fireblocking in accordance with Section 717.2.1;
    1.4. By protecting both outlet boxes with listed putty pads; or
    1.5. By other listed materials and methods.
2. Membrane penetrations for listed electrical outlet boxes of any material are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with

the instructions included in the listing. Outlet boxes on opposite sides of the wall shall be separated as follows:

2.1. By a horizontal distance of not less than 24 inches (610 mm);
2.2. By solid fireblocking in accordance with Section 717.2.1;
2.3. By protecting both outlet boxes with listed putty pads; or
2.4. By other listed materials and methods.

3. The annular space created by the penetration of a fire sprinkler provided it is covered by a metal escutcheon plate.
4. Vents may be installed in soffits of exterior balconies required to have a fire-resistance-rating equivalent to the floor. If provided, vent openings shall be covered with corrosion–resistant metal mesh.
5. When Section 704 requires that eaves be finished on the underside with fire-resistance-rated materials, vents may be installed if the vent openings are covered with corrosion–resistant metal mesh.

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8. Background information on amendment. Exception 4 to Section 712.3.2, which allows limited openings for vents in fire-resistance-rated exterior balconies, is a practical means to prevent moisture damage. In Seattle, moisture damage is a more prevalent hazard than fire. The amendment increases the amount of ventilation which helps prevent deterioration of the balcony.

Exception 5 is related to the amendments to Section 704.2 approved by the State Building Code Council earlier. Section 704.2 requires eaves that project from rated walls to be protected on the underside. This amendment to Section 712.3.2 allows vents to be installed in those eaves, which is required for protection against moisture damage.

Amendment #7

7. Proposed Code Amendment

Code IBC Section 1008.1.2 Page 199

1008.1.2 Door swing. Egress doors shall be side-hinged or pivoted swinging.

Exceptions:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Doors within or serving a single dwelling unit in Groups R-2 and R-3 as applicable in Section 101.2.
4. In other than Group H occupancies, revolving doors complying with Section 1008.1.3.1.
5. In other than Group H occupancies, horizontal sliding doors complying with Section 1008.1.3.3 are permitted in a means of egress.
6. Power-operated doors in accordance with Section 1008.1.3.2.

7. In other than H occupancies, manually-operated horizontal sliding doors are permitted in a means of egress from occupied spaces with an occupant load of 10 or less.

8. Background information on amendment. This amendment has been recommended by the Building Code TAG for adoption into the State Building Code, and the exception is included in the current proposed State Building Code amendments. The amendment is necessary in Seattle because of the prevalence of small balconies on upper floors of multifamily buildings. The Seattle Land Use Code has requirements for modulation and open space that encourage the use of balconies; many of the balconies are too narrow for swinging doors.

Amendment #8

7. Proposed Code Amendment

Code IBC Section 1013.5 Page 210

1013.5 Egress balconies. Balconies used for egress purposes shall conform to the same requirements as corridors for width, headroom, dead ends and projections. Exterior balconies shall be designed to minimize accumulation of snow or ice that impedes the means of egress.

Exception: Exterior balconies and concourses in outdoor stadiums shall be exempt from the design requirement to protect against the accumulation of snow or ice.

1013.5.1 Wall separation. Exterior egress balconies shall be separated from the interior of the building by walls and opening protectives as required for corridors.

Exceptions:

1. Separation is not required where the exterior egress balcony is served by at least two stairs and a dead-end travel condition does not require travel past an unprotected opening to reach a stair.
2. Separation is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

8. Background information on amendment. This amendment is a code alternate that recognizes the effectiveness of sprinkler systems.

Amendment #9

7. Proposed Code Amendment

Code IBC Section Table 1016.1 Page 212

TABLE 1016.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING(hours)	
		Without sprinkler system	With sprinkler system[c]
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	((~~Greater than 10~~)) All	1	((~~0.5~~)) 1
I-2[a], I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1[b]

a. For requirements for occupancies in Group I-2, see Section 407.3.
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

8. Background information on amendment. This is an amendment that very rarely applies to buildings within the scope of the Council's review. Very few small residential buildings have corridors.

Because of the greater density of housing in Seattle, one-hour corridors are required in all residential occupancies to provide greater protection to occupants of the more densely-populated buildings.

This amendment also coordinates with the "Ozark Ordinance", a retroactive ordinance enacted in 1970 after a catastrophic fire in an apartment building in Seattle. The Ozark Ordinance, codified as Chapter 90 of the Seattle Fire Code, requires enclosed stairways and one-hour corridors in residential buildings four stories and over. The Building Code extends the corridor requirement to all Group R-2 occupancies because the rationale applies to the smaller as well as larger buildings.

Amendment #10

7. Proposed Code Amendment

Code IBC Section 1018.1 Page 213

1018.1 Minimum number of exits. All rooms and spaces within each story shall be provided with and have access to the minimum number of approved independent exits as required by Table 1018.1 based on the occupant load, except as modified in Section 1014.1 or 1018.2. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories. The required number of exits from any story, basement or individual space shall be maintained until arrival at grade or the public way.

Exceptions:

1. Occupied roofs with an occupant load of 10 or less may have one exit.
2. Access to only one exit or exit-access doorway is permitted for floors below the first story above grade plane where:
   2.1 The area of the floor does not exceed 900 square feet (83.61 m^2);
   2.2 Travel distance is less than 50 feet (15 240 mm); and
   2.3 The floor contains only storage rooms, laundry rooms, and maintenance offices.

8. Background information on amendment. Exception 1 accommodates rooftop decks which are often used to fulfill Land Use Code open space requirements. Open space is an important amenity that is difficult to provide at grade level on the small lots that are available in Seattle. One exit should provide adequate capacity for ten occupants, and the small size of the deck is a safeguard that reduces the likelihood of the exit being blocked by fire. Roof decks are only occupied seasonally, and usually for relatively short periods of time.

Exception 2 also accommodates a need to squeeze more features into less space on a site. It allows one exit in small basement areas that are unoccupied most of the time. Under the IBC, these buildings will be protected with a sprinkler system, further reducing the hazard.

Amendment #11

7. Proposed Code Amendment

Code IBC Section 1022.3 Page 217

1022.3 Open side. Exterior exit ramps and stairways serving as an element of a required means of egress shall be at least 50 percent open on at least one side. An open side shall have a minimum of ((~~35~~)) 28 square feet (((~~3.3~~)) 2.6 m^2) of aggregate open area adjacent to each floor. The open area shall be distributed to prevent accumulation of smoke or toxic gases. ((~~level and the level of each intermediate landing. The required open area shall be located not less than 42 inches (1067 mm) above the adjacent floor or landing level.~~))

8. Background information on amendment. The change in the geometry of the openings in exterior exit stairways and ramps allows a solid railing on the side exposed to the weather and clarifies the meaning of "open". This design both protects the building from water damage and reduces the risk of falls on slick stairs. It allows for venting of smoke, and is consistent with the provisions for exterior balconies.

Amendment #12

7. Proposed Code Amendment

Code IBC Section 1023.5.2 Page 218

1023.5.2 Construction and openings. Where an egress court serving a building or portion thereof is less than 10 feet (3048 mm) in width, the egress court walls shall be not

less than 1-hour fire-resistance-rated exterior walls complying with Section 704 for a distance of 10 feet (3048 mm) above the floor of the court, and openings therein shall be equipped with fixed or self-closing, $^{3}/_{4}$-hour opening protective assemblies.

Exceptions:

1. Egress courts serving an occupant load of less than 10.
2. Egress courts serving Group R-3 as applicable in Section 101.2.
3. In buildings other than those which have a single means of egress under Section 1018.2 exception 4, opening protection need not be provided where it is possible to exit in two directions from the court.

8. Background information on amendment. It is common in certain zones in Seattle for buildings to exit into a side yard or path between buildings. This amendment allows a slight reduction in fire protection where redundant exit paths exist outside the building. In the situations where this exception applies, the building's occupants will have had two choices of ways to exit the building. When they reach the exterior of the building, they will again have two choices in direction. If there is a fire hazard from openings in one direction, they should be able to reach the public way by going the other direction.

Many apartments have no other exterior wall other than the wall along the exterior egress path. The exception allows those apartments to have windows. This provision is similar to the provisions for exterior egress balconies.

Amendment #13

7. Proposed Code Amendment

Code IBC Section 1204.1 Page 240

1204.1 Equipment and systems. Interior spaces intended for human occupancy shall be provided with active or passive space-heating systems capable of maintaining ((~~a minimum~~)) an average indoor temperature of 68°F (20°C) at a point 3 feet (914 mm) above the floor ((~~on the design heating day~~)) when the outside temperature is 24°F.

Exception: Interior spaces where the primary purpose is not associated with human comfort.

See the Seattle Energy Code and Seattle Mechanical Code for further requirements for heating systems.

8. Background information on amendment. This amendment is related to the Seattle Housing and Building Maintenance Code (HBMC), which requires a minimum temperature of 65°. Changing the requirement for a minimum to an average temperature while retaining the IBC's temperature of 68° is the smallest change from the IBC that maintains consistency with the HBMC.

Amendment #14

7. Proposed Code Amendment

Code IBC Section 1205.1 Page 240

1205.1 General. Every space intended for human occupancy shall be provided with natural light by means of exterior glazed openings in accordance with Section 1205.2. ((~~or~~)) In other than Group R occupancies, such spaces shall be permitted to be provided with artificial light in accordance with Section 1205.3 in lieu of natural light. Exterior glazed openings shall open directly onto a public way or onto a yard or court in accordance with Section 1206.

EXCEPTIONS:

1. Kitchens in Group R Occupancies may be provided with artificial light.
2. In Group R-1 and R-2 occupancies, artificial light may be provided in lieu of natural light in one habitable room in addition to the kitchen provided:

2.1 In Group R-2, the room is limited in size to ten percent of the area of the dwelling unit or 100 square feet (3048 mm), whichever is larger; and

2.2 In sleeping units and dwelling units located less than 75 feet below the lowest level of fire department vehicle access, the room is not used as a sleeping room.

8. Background information on amendment. This amendment was made at the urging of the public advisory committee that assists with review of Seattle's code amendments. The group, with input from a local AIA code committee, felt strongly that natural light is important for mental health and well-being, especially in the dreary winter months. There have been proposals for sleeping units or dwelling units in Seattle without natural light, although only in larger buildings. This amendment also coordinates with natural light requirements found in the HBMC.

Amendment #15

7. Proposed Code Amendment

Code IBC Section 1207 Page 241

1207.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units or between dwelling units and adjacent public areas such as halls, corridors, stairs or service areas.

1207.2 Air-borne sound. Walls, partitions and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill.

EXCEPTION: Dwelling unit or guest room entrance doors from interior corridors and interconnecting doors between separate units shall have perimeter seals and such

door assemblies shall have a sound transmission class (STC) rating of not less than 28.

1207.3 Structure-borne sound. Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area within the structure shall have an impact insulation class (IIC) rating of not less than 50 (45 if field tested) when tested in accordance with ASTM E 492.

EXCEPTION: Floor assemblies in the bathrooms of Group R, Division 1 occupancies are not required to meet the impact insulation class of 50 where structural concrete floor systems are used.

Joints in the perimeter of such separating wall or floor-ceiling assemblies shall be acoustically sealed with a permanent resilient material approved for such purpose. The separating wall or floor-ceiling assembly shall extend completely to and be sealed to another separating assembly or an exterior wall, roof or floor assembly.

Conduits, ducts, pipes and vents within such wall or floor-ceiling assemblies causing vibration shall be reasonably isolated from the building construction at points of support by means of resilient sleeves, mounts or underlayments. All other openings through which such conduits, ducts, pipes or vents pass shall have the excess opening fully sealed with insulative and permanently resilient materials approved for such purpose.

Electrical outlet boxes shall not be placed back-to-back and shall be offset by not less than 12 inches (305 mm) from outlets in the opposite wall surface. The back and sides of boxes shall be sealed with one-eighth-inch resilient sealant and backed by a minimum of 2-inch thick material fiber insulation or approved equivalent.

Metal ventilating and conditioned air ducts which pass between dwelling units shall be fabricated and installed to maintain required sound transmission ratings.

1207.4 Tested Assemblies. Field- or laboratory-tested wall or floor-ceiling designs having an STC or IIC of 50 or more may be used without additional field testing when, in the opinion of the building official, the tested design has not been compromised by flanking paths. Tests may be required by the building official when evidence of compromised separations are noted.

1207.5 Field Testing and Certification. Field testing, when permitted to determine airborne sound transmission or impact sound insulation class, shall be done in accordance with ASTM E 336 or ASTM E 492 under the supervision of an acoustical professional who is experienced in the field of acoustical testing and engineering and who shall forward certified test results to the building official that minimum sound insulation requirements stated above have been met.

1207.6 Mechanical Equipment Spaces. Spaces or shafts containing air conditioning, refrigeration or ventilating equipment, elevator machinery, or other mechanical equipment shall be separated both vertically and horizontally from adjoining dwelling units or guest rooms by construction designed to provide a minimum STC rating of 50.

1207.7 Sound Transmission Control Systems. Generic systems as listed in GA 600-00 may be accepted where a laboratory test indicates that the requirements of Section 1207 are met by the system.

Note: Design and materials for sound transmission control shall not impair the fire-resistive integrity of separating walls or floor-ceiling assemblies required to be of fire-resistive construction.

8. Background information on amendment. Regulation of sound transmission between dwelling units is essential to quality of life in a dense urban environment. Seattle residents are affected by noise from two airports, two interstate highways, and some of the worst traffic congestion in the nation as well as sirens, thumping car audio systems, barking dogs, garbage trucks, etc. These provisions protect residents of multifamily housing from additional noise from their neighbors. Seattle's amendments supplement the provisions of the IBC and contain more prescriptive methods for compliance.

Amendment #16

7. Proposed Code Amendment

Code IBC Section 1208.2 Page 241

((~~**1208.2 Minimum ceiling heights.** Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall be permitted to have a ceiling height of not less than 7 feet (2134 mm).~~

~~**Exceptions:**~~

1. ~~In one- and two-family dwellings, beams or girders spaced not less than 4 feet (1219 mm) on center and projecting not more than 6 inches (152 mm) below the required ceiling height.~~
2. ~~If any room in a building has a sloped ceiling, the prescribed ceiling height for the room is required in one-half the area thereof. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof.~~
3. ~~Mezzanines constructed in accordance with Section 505.1.~~

~~**1208.2.1 Furred ceiling.** Any room with a furred ceiling shall be required to have the minimum ceiling height in two-thirds of the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet (2134 mm).~~))

1208.2 Minimum ceiling heights. Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms and basements shall have a ceiling height of not less than 7 feet (2134 mm). The required height shall be measured from the finished floor to the lowest projection from the ceiling.

EXCEPTIONS: 1. Beams and girders spaced not less than 4 feet (1219 mm) on center may project not more than 6 inches (153 mm) below the required ceiling height.

Interpretation I1208.2: Ducts and architectural features such as soffits and coved ceilings may project not more than 6 inches (153 mm) below the required ceiling height allowed for beams and girders.

2. Ceilings in basements may project to within 6 feet 8 inches (2032 mm) of the finished floor, and beams, girders, ducts or other obstructions may project to within 6 feet 4 inches (1931 mm) of the finished floor.
3. Not more than 50 percent of the required floor area of a room or space is permitted to have a sloped ceiling less than the prescribed height, with no portion of the required floor area less than 5 feet (1524 mm) in height.
4. The ceiling height along an accessible route of travel, as defined in Chapter 11, shall be at least 79 inches (2007 mm), including allowable projections below the minimum ceiling height.

8. Background information on amendment. The State Building Code amendments allow 7-foot ceilings in residential occupancies. With regard to residential occupancies, the Seattle amendments differ from the state code only in allowing basements in dwellings to have ceilings of 6'8". The other amendments in this section apply to other occupancies, or are reformatting of the IBC language. The 6'8" basement ceiling height is most often used when older homes are remodeled; it is rarely used in new construction.

Amendment #17

7. Proposed Code Amendment

Code IBC Section 1208.3 Page 241

1208.3 Room area. Every dwelling unit shall have at least one common room that shall have not less than 120 square feet (13.9 m^2) of net floor area. Every room which is used for both cooking and living or both living and sleeping quarters shall have a floor area of not less than 130 square feet (12 m^2) if used or intended to be used by only one occupant, or of not less than 150 square feet (14 m^2) if used or intended to be used by more than one occupant. Where more than two persons occupy a room used for sleeping purposes, the required floor area shall be increased at the rate of 50 square feet (4.6 m^2) for each occupant in excess of two. In a dormitory, minimum floor area shall be 60 square feet (5.5 m^2) per single or double bunk and aisles not less than 3 feet (914 mm) in width shall be provided between the sides of bunks and from every bunk to an exit or exit-access doorway. Other habitable rooms shall have a net floor area of not less than 70 square feet (6.5 m^2).

Exception: Every kitchen in a one- and two-family dwelling shall have not less than 50 square feet (4.64 m^2) of gross floor area.

8. Background information on amendment. These amendments are consistent with provisions of the Seattle Housing and Building Maintenance Code (HBMC), and have been part of the Seattle codes for many years. The requirement for a common room of 120 square feet in each dwelling responds to more recent proposals for housing units, similar to boarding houses, which contain many bedrooms that share a common kitchen and dining room. It is the kitchen and dining room or living room, accessible to all tenants, that should have the larger minimum size. The other minimum sizes are intended to counteract the tendency for reductions in sizes of dwelling units in the crowded urban environment. In the HBMC, the provisions are intended to prevent apartment buildings from being partitioned into many units and becoming overcrowded.

Amendment #18

7. Proposed Code Amendment

Code IBC Section 1208.5 Page 242

1208.5 Other Requirements for Dwelling Units. In no dwelling unit or congregate residence shall the only access from a bedroom to a bathroom be through another bedroom.

Kitchens shall be provided with a kitchen sink, hot and cold running water, counter work space, cabinets for storage of cooking utensils and dishes, and stove and refrigerator or adequate space for the installation of the stove and refrigerator. Splash backs and counter tops shall have impervious surfaces.

8. Background information on amendment. This is another of the amendments that coordinate with the Seattle Housing and Building Maintenance Code. Note that Section 2903 of the State Building Code requires a kitchen sink in every dwelling unit, and requires that each required sink be provided with hot and cold running water.

Amendment #19

7. Proposed Code Amendment

Code IBC Section 1210.5 Page 242

1210.5 Toilet rooms. No water closet shall be housed in any room or space used for the preparation of food. Toilet rooms shall not open directly, without a door, into a room used for the preparation of food ((~~for service to the public~~)).

8. Background information on amendment. The first sentence of this section states a common-sense requirement that is important for existing housing, and is consistent with the Seattle Housing and Building Maintenance Code. The addition of the phrase "without a door" is an interpretation of what it means to "open directly into a room".

Amendment #20

7. Proposed Code Amendment

Code IBC Section 1603.1.3 & 1608.1 Page 270 & 279

1603.1.3 Roof snow load. Where snow load is calculated according to Sections 1608.2 through 1608.9, ((~~T~~))the ground snow load, *Pg*, shall be indicated. In areas where the ground snow load, *Pg*, exceeds 10 pounds per square foot (psf) (0.479 kN/m^2), the following additional information shall also be provided, regardless of whether snow loads govern the design of the roof:

1. Flat-roof snow load, P_f.
2. Snow exposure factor, C_e.
3. Snow load importance factor, I_s.
4. Thermal factor, C_t.

***

1608.1 General. Design snow loads shall be determined in accordance with Section 7 of ASCE 7, but the design roof load shall not be less than that determined by Section 1607. Roof snow loads are permitted to be assumed to be 25 psf in lieu of compliance with Sections 1608.2 through 1608.9.

8. Background information on amendment. These amendments interpret how Sections 1603.1.3 and 1608 are coordinated. Seattle has determined, in accordance with SEAW "*Snow Load Analysis for Washington*", that the appropriate roof snow load for sites in the city is 25 pounds per square foot. The amendment to Section 1603.1.3 clarifies that it is only necessary to state the roof snow load when a value different than 25 psf is calculated according to Section 1608. Section 1608.1 allows designers to assume a snow load of 25 psf instead of referring to maps and doing calculations according to the rest of Section 1608.

Amendment #21

7. Proposed Code Amendment

Code IBC Section Table 1607.1 Page 275

TABLE 1607.1 MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS((~~g~~))		
OCCUPANCY OR USE	**UNIFORM (psf)**	**CONCENTRATED (lbs.)**
***		
5. Balconies and decks (exterior) ((~~On one- and two-family residences only, and not exceeding 100 ft.2~~)) Private balconies and decks accessory to a dwelling unit Common use balconies and decks generally not accessible to the public All other balconies and decks	((~~100~~)) 40 60 100	—
((~~6. Decks~~	~~Same as occupancy served~~[~~h~~]	—))
***		

8. Background information on amendment. There is no logical basis for a distinction between balconies and decks. According to the IBC definition, balconies are supported by the building with no additional support; decks are supported by posts or piers (IBC 1602.1). Seattle has made this amendment since this distinction first appeared in the 1985 UBC. The load assigned to private decks in the amendment is the live load applicable to one- and two-family dwellings in the IBC. The load assigned to decks accessible to the public is the load assigned by the IBC to public rooms in multifamily dwellings, and to yards and terraces.

Amendment #22

7. Proposed Code Amendment

Code IBC Section 1614.1.1, 1614.2, 1614.3 Page 303

Delete Sections 1614.1.1, 1614.2, 1614.3

8. Background information on amendment. These three sections regulate existing buildings, and conflict with Chapter 34 of the Seattle Building Code. WAC 51-04-030 allows local governments to adopt amendments to Chapter 34, and deletion of these sections is necessary for consistency with Chapter 34.

Amendment #23

7. Proposed Code Amendment

Code IBC Section Several sections in Chapter 16 Page 327-341

1616.5 Building configuration. Buildings shall be classified as regular or irregular based on the criteria in Section 9.5.2.3 of ASCE 7.

((~~**Exception:** Buildings designed using the simplified analysis procedure in Section 1617.5 shall be classified in accordance with Section 1616.5.1.~~))

***

Sections 1615.5.1 through 1616.5.1.2 are deleted.

***

1616.6 Analysis procedures. A structural analysis conforming to one of the types permitted in Section 9.5.2.5.1 of ASCE 7 ((~~or to the simplified procedure in Section 1617.5~~)) shall be made for all structures. The analysis shall form the basis for determining the seismic forces, E and E_m, to be applied in the load combinations of Section 1605 and shall form the basis for determining the design drift as required by Section 9.5.2.8 of ASCE 7 ((~~or Section 1617.3~~)).

Exception((~~s~~)):

((~~1.~~)) Structures assigned to Seismic Design Category A.

((~~2. Design drift need not be evaluated in accordance with Section 1617.3 when the simplified analysis method of Section 1617.5 is used.~~))

Note: ASCE 7 Section 9.5.4 contain a simplified analysis procedure.

((~~**1616.6.1 Simplified analysis.** A simplified analysis, in accordance with Section 1617.5, shall be permitted to be used for any structure in Seismic Use Group I, subject to the following limitations, or a more rigorous analysis shall be made:~~

1. ~~Buildings of light-framed construction not exceeding three stories in height, excluding basements.~~
2. ~~Buildings of any construction other than light-framed construction, not exceeding two stories in height, excluding basements, with flexible diaphragms at every level as defined in Section 1602.~~))

1616.6.1 Modification of ASCE 7, Section 9.5.6.8. Modify ASCE 7 Section 9.5.6.8 as follows

9.5.6.8 Design Values. The design value for the modal base shear (V_t), each of the story shear, moment and drift quantities, and the deflection at each level shall be determined by combining their modal values as obtained from Sections 9.5.6.6 and 9.5.6.7. The

combination shall be carried out by taking the square root of the sum of the squares of each of the modal values or where closely spaced periods in the translational and torsional modes result in significant cross-correlation of the modes, the complete quadratic combination (CQC) method, in accordance with ASCE-4, shall be used.

A base shear (V) shall be calculated using the equivalent lateral force procedure in Section 9.5.5. For the purpose of this calculation, a fundamental period of the structure (T), in seconds, shall not exceed the coefficient for upper limit on the calculated period (C_u) times the approximate fundamental period of the structure (T_a). Where the design value for the modal base shear (V_t) is less than 85% of the calculated base shear (V) using the equivalent lateral force procedure, the design forces shall be multiplied by the following modification factor:

$$0.85\ \frac{V}{V_t} \qquad \textbf{(Eq. 9.5.6.8)}$$

***

Tables 1616.5.1.1 and 1616.5.1.2 are deleted.

***

1617.2 Redundancy. The provisions given in Section 9.5.2.4 of ASCE 7 shall be used.

((~~**Exception:** Structures designed using the simplified analysis procedure in Section 1617.5 shall use the redundancy provisions in Sections 1617.2.2.~~))

***

Sections 1617.2.2 through 1617.2.2.2 are deleted.

***

1617.3 Deflection and drift limits. The provisions given in Section 9.5.2.8 of ASCE 7 shall be used.

((~~**Exception:** Structures designed using the simplified analysis procedure in Section 1617.5 shall meet the provisions in Section 1617.3.1.~~

***

Sections 1617.3.1 through 1617.5.4 are deleted

***

1617.6 Seismic-force-resisting systems. The provisions given in Section 9.5.2.2 of ASCE 7 shall be used except as modified in Section 1617.6.1.

((~~**Exception:** For structures designed using the simplified analysis procedure in Section 1617.5, the provisions of Section 1617.6.2 shall be used.~~))

***

Sections 1617.6.2 through 1617.6.2.4.4 are deleted.

***

Tables 1617.3.1 and 1617.6.2 are deleted.

***

1620.1 Structural component design and detailing. The design and detailing of the components of the seismic-force-resisting system shall comply with the requirements of Section 9.5.2.6 of ASCE 7 in addition to the nonseismic requirements of this code except as modified in Sections 1620.1.1, 1620.1.2 and 1620.1.3.

((~~**Exception:** For structures designed using the simplified analysis procedure in Section 1617.5, the provisions of Sections 1620.2 through 1620.5 shall be used.~~))

***

Sections 1620.2 through 1620.5 are deleted.

8. Background information on amendment. All of these sections relate to the 2003 IBC's simplified method of seismic design. As published in the 2003 IBC, this method is incomplete, confusing and extremely difficult to use. Being in a higher seismic area, Seattle wants to direct designers away from this problematic design method and point them toward the ASCE 7 simplified method instead. The flaws are serious enough that the ICC membership removed these provisions from the 2006 IBC. (See IBC code change proposal Item S27-03/04.) Seattle has adopted these provisions from the *2004 Supplement to the International Codes*, based on a strong recommendation from the SEAW Earthquake Engineering Committee.

Amendment #24

7. Proposed Code Amendment

Code IBC Section 1802 Page 361-362

1802.1 General. Foundation and soils investigations shall be conducted in conformance with Sections 1802.2 through 1802. Where ((~~required by the building official,~~)) the classification and investigation of the soil <u>is required by this code, such analysis</u> shall be made by a registered design professional.

1802.2 Where required. The owner or applicant shall submit a foundation and soils investigation to the building official where required in Sections 1802.2.1 through 1802.2.7.

Exception: The building official need not require a foundation or soils investigation where satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary for any of the conditions in Sections 1802.2.1 through 1802.2.6.

1802.2.1 Questionable soil. Where the ((~~safe-sustaining power~~)) <u>strength characteristics</u> of the soil ((~~is~~)) <u>are</u> in doubt, or where a load-bearing value superior to that specified in this code is claimed, the building official ((~~shall~~)) <u>may</u> require that the necessary investigation be made. Such investigation shall comply with the provisions of Sections 1802.4 through 1802.6.

1802.2.2 Expansive soils. In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist.

1802.2.3 Ground-water table. A subsurface soil investigation shall be performed to determine whether the existing static ground-water table is above or within 5 feet below the elevation of the lowest floor level where such floor is located below the finished ground level adjacent to the foundation.

Exception: A subsurface soil investigation shall not be required where waterproofing is provided in accordance with Section 1807.

1802.2.4 Pile and pier foundations. Pile and pier foundations shall be designed and installed on the basis of a foundation investigation and report as specified in Sections 1802.4 through 1802.6 and Section ((~~1808.2.1~~)) 1808.2.2.

1802.2.5 Rock strata. Where subsurface explorations at the project site indicate variations or doubtful characteristics in the structure of the rock upon which foundations are to be constructed, the building official may require a sufficient number of borings ((~~shall~~)) to be made to a depth of not less than 10 feet below the level of the foundations to provide assurance of the soundness of the foundation bed and its load-bearing capacity.

1802.2.6 Seismic Design Category C. Where a structure is determined to be in Seismic Design Category C in accordance with Section 1616, and where the structure is located in an area known to be a geologic hazard area as defined in the Regulations for Environmentally Critical Areas, a((~~n~~)) soils investigation shall be conducted, and shall include an evaluation of the following potential hazards resulting from earthquake motions: slope instability, liquefaction and surface rupture due to faulting or lateral spreading.

Exception: The building official may waive this evaluation upon receipt of the written opinion of a qualified geotechnical engineer that the building's foundation design adequately addresses liquefaction.

1802.2.6.1 Slope Instability. The potential for soil strength loss due to slope instability shall be evaluated for an earthquake ground motion that, as a minimum, has a 40% probability of exceedance in 50 years. This is achieved by assuming a near crustal event of magnitude 6.5 directly below the site. Peak ground acceleration may be determined based on a site-specific study taking into account soil amplification effects. In the absence of such a study, peak ground acceleration may be assumed equal to 0.2g for the purpose of determining soil strength loss due to slope instability.

1802.2.7 Seismic Design Category D, E or F. Where the structure is determined to be in Seismic Design Category D, E or F, in accordance with Section 1616 and the structure is located in an area known to be a geologic hazard area as defined in the Regulations for Environmentally Critical Areas, or where basement or retaining walls in geologic hazard areas exceed 12 feet in height, the soils investigation requirements for Seismic Design Category C, given in Section 1802.2.6, shall be met, in addition to the following. The investigation shall include:

1. A determination of lateral pressures on basement and retaining walls due to earthquake motions.
2. An assessment of potential consequences of any liquefaction and soil strength loss, including estimation of differential settlement, lateral movement or

reduction in foundation soil-bearing capacity, and shall address mitigation measures. Such measures shall be given consideration in the design of the structure and can include, but are not limited to, ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements or any combination of these measures. The potential for liquefaction and soil strength loss shall be evaluated for site peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions. Peak ground acceleration shall be determined from a site-specific study taking into account soil amplification effects, as specified in Section 1615.2.

Exceptions:

1. A site-specific study need not be performed provided that peak ground acceleration equal to $S_{DS}/2.5$ is used, where S_{DS} is determined in accordance with Section 1615.2.1.
2. A site-specific study need only be performed for one- and two-family dwellings if they are located on Site Class F soils.

***

1802.6 Reports. The soil classification and design load-bearing capacity shall be shown on the construction document. Where required by the building official, a written report of the investigation shall be submitted that includes, but need not be limited to, the following information:

1. A plot plan showing the location of test borings and/or excavations.
2. A complete record of the soil samples.
3. A record of the soil profile.
4. Elevation of the water table, if encountered.
5. Recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil; provisions to mitigate the effects of expansive soils; mitigation of the effects of liquefaction, differential settlement and varying soil strength; mitigation of the effects of slope instability; and the effects of adjacent loads.
6. Expected total and differential settlement.
7. Pile and pier foundation information in accordance with Section 1808.2.2.
8. Special design and construction provisions for footings or foundations founded on expansive soils, as necessary.
9. Compacted fill material properties and testing in accordance with Section 1803.5.

8. Background information on amendment. These amendments coordinate with Seattle's Environmentally Critical Areas Ordinance (ECA), and were based on recommendations from the SEAW Geotechnical Engineering Committee.

The amendment to Section 1802.1 clarifies that the building official will require a professional report whenever the code requires a soils analysis. As written, the code implies the building official might require a professional report for unspecified reasons.

Amendments to Section 1802.2.1 alleviate the requirement that investigation always be required when the strength of the soil is in doubt. A similar amendment to the term "safe sustaining power" has been approved by the ICC Code Development Committee for the 2006 IBC. The amendment is intended to state the reasons for investigation more clearly.

The word "static" is added to Section 1802.2.4 to more precisely identify the point from which the level of the water table is measured.

Section 1802.2.5 gives the building official authority to not require borings every time variations in rock are found. Seattle has an extensive record of past soils reports. We also have a team of three experienced geotechnical engineers who are very familiar with the conditions of Seattle's geology who can exercise professional judgment about whether additional information is needed.

Amendments to Section 1802.2.6 adds a requirement for soils investigations for areas that are located in areas defined by the ECA Ordinance as areas of geologic hazard (landslide-prone and liquefaction-prone areas). The amendments allow the building official to accept a professional engineer's statement that investigation is not necessary, and clarify what conditions the soils report must address.

Section 1802.2.7 is coordinated with the ECA Ordinance. It gives an exception to the requirement for a site-specific study for one- and two-family dwellings because Seattle already knows enough about soil conditions that we feel comfortable reviewing smaller projects on the basis of existing information.

Section 1802.6 adds a requirement that the soils report address slope instability, which is one of the conditions that makes a site subject to the ECA Ordinance.

Amendment #25

7. Proposed Code Amendment

Code IBC Section 1813 Page 385

SECTION 1813
METHANE REDUCTION MEASURES

1813.1 Applicability. This section applies to all construction activities on or within 1,000 feet (305 m) of an active, closed or abandoned landfill that has been identified by the building official to be generating levels of methane gas on-site at the lower explosive limits or greater levels. The distance shall be calculated from the location of the proposed structure to the nearest property line of the active or former landfill site. The building official may waive these requirements if technical studies demonstrate that dangerous amounts of methane are not present on the site.

1813.2 Protection of Structures. All enclosed structures to be built within the 1,000 foot (305 m) landfill zone must be protected from potential methane migration. The method for insuring a structure's protection from methane shall be addressed in a report prepared by a licensed civil engineer and submitted by the applicant to the department for approval. The report shall contain a description of the investigation and

recommendations for preventing the accumulation of explosive concentrations of methane gas within or under enclosed portions of the building or structure. At the time of final inspection, the civil engineer shall furnish a signed statement attesting that, to the best of the engineer's knowledge, the building or structure has been constructed in accordance with the recommendations for addressing methane gas migration.

8. Background information on amendment. This amendment incorporates a provision from the Seattle-King County Board of Health Solid Waste Regulations almost verbatim. It is also consistent with a provision of Seattle's Regulations for Environmentally Critical Areas. The regulation is repeated in the Building Code in order to provide more notice to property owners and building designers.

Amendment #26

7. Proposed Code Amendment

Code IBC Section 1905 Page 392

1905.1 General. The required strength and durability of concrete shall be determined by compliance with the proportioning, testing, mixing and placing provisions of Sections 1905.1.1 through 1905.13.

1905.1.1 Strength. Concrete shall be proportioned to provide an average compressive strength as prescribed in Section 1905.3, and shall satisfy the durability criteria of Section 1904. Concrete shall be produced to minimize the frequency of strengths below f'_c as prescribed in Section 1905.6.3.3. For concrete designed and constructed in accordance with this chapter, f'_c shall not be less than ((~~2,500~~)) 2,000 psi (((~~17.22~~)) 13.79 Mpa). No maximum specified compressive strength shall apply unless restricted by a specific provision of this code or ACI 318.

1905.1.2 Cylinder tests. Requirements for f'_c shall be based on tests of cylinders made and tested as prescribed in Section 1905.6.3.

1905.1.3 Basis of f'_c. Unless otherwise specified, f'_c shall be based on 28-day tests. If other than 28 days, test age for f'_c shall be as indicated in construction documents.

1905.1.4 Lightweight aggregate concrete. Where design criteria in ACI 318, Sections 9.5.2.3, 11.2 and 12.2.4, provide for use of a splitting tensile strength value of concrete (f_{ct}), laboratory tests shall be made in accordance with ASTM C 330 to establish the value of f_{ct} corresponding to the specified value of f'_c.

1905.1.5 Field acceptance. Splitting tensile strength tests shall not be used as a basis for field acceptance of concrete.

1905.2 Selection of concrete proportions. Concrete proportions shall be determined in accordance with the provisions of Sections 1905.2.1 through 1905.2.3.

1905.2.1 General. Proportions of materials for concrete shall be established to provide:

1. Workability and consistency to permit concrete to be worked readily into forms and around reinforcement under the conditions of placement to be employed, without segregation or excessive bleeding.
2. Resistance to special exposures as required by Section 1904.
3. Conformance with the strength test requirements of Section 1905.6.

1905.2.2 Different materials. Where different materials are to be used for different portions of proposed work, each combination shall be evaluated.

1905.2.3 Basis of proportions. Concrete proportions shall be established according to Table 1905.2. Table 1905.2 shall be used only for concrete to be made with cements meeting strength requirements for Type I, II, or III of ASTM C 150, and shall not be applied to concrete containing lightweight aggregates. When approved by the building official, Table 1905.2 may be used with air-entraining admixtures (conforming to ASTM C260) and/or normal-range water-reducing admixtures (conforming to ASTM C494, Types A, D or E).

For strengths greater than 4000 psi, proportions shall be established on the basis of field experience and trial mixtures according to Section 1905.3. When approved by the building official, ((~~C~~))concrete proportions ((~~shall~~)) may be established in accordance with Section 1905.3 or Section 1905.4, and shall comply with the applicable requirements of Section 1904.

TABLE 1905.2—MINIMUM PERMISSIBLE CEMENT CONTENT FOR CONCRETE (WHEN STRENGTH DATA FROM TRIAL BATCHES OR FIELD EXPERIENCE ARE NOT AVAILABLE)

Specified 28-day Compressive Strength in psi (f'_c)	Minimum Permissible Cement Content in Pounds/cu. yd.	Minimum Permissible Cement Content in Std. 94-lb. Sacks/cu. yd.
2000	423	4-1/2[1]
2500	470	5[1]
3000	517	5-1/2
4000[2]	611	6-1/2

Mixes shall be proportioned to produce a five-inch or less slump. No more than a one-inch plus tolerance shall be allowed.

[1]Where special inspection is not required under Section 1704, the minimum permissible cement content shall be increased 1/2 sack per cubic yard of concrete.

[2]For strengths above 4000 p.s.i., see Section 1905.2.3.

8. Background information on amendment. The city of Seattle has an enhanced monitoring system that produces concrete with actual strengths better than the nominal strength specified in the Code. Results from the monitoring system show that 2000 psi design mixes actually perform as well as 3000 psi nominal mixes. Michal Rosencrans, who established Seattle's system, has become known throughout the area for her expertise in use of concrete as a building material. Ms. Rosencrans worked to establish these proportions as a simplified means of measuring and monitoring concrete mixes. These code amendments function as a code alternate, recognizing that Seattle's system as an alternative to compliance with the IBC. Records from Seattle's special inspection program validate these strengths.

Amendment #27

7. Proposed Code Amendment

Code IBC Section 2305.1.5 & 2305.1.6 Page 458

2305.1.5 Wood members resisting horizontal seismic forces contributed by masonry and concrete. Wood shear walls, diaphragms, horizontal trusses and other

members shall not be used to resist horizontal seismic forces contributed by masonry or concrete construction in structures over one story in height.

Exceptions:

1. Wood floor and roof members are permitted to be used in horizontal trusses and diaphragms to resist horizontal seismic forces contributed by masonry or concrete ((~~construction (including those due to masonry veneer, fireplaces and chimneys)~~)) walls provided such forces do not result in torsional force distribution through the truss or diaphragm.
2. Wood structural panel sheathed shear walls are permitted to be used to provide resistance to seismic forces contributed by masonry or concrete ((~~construction~~)) walls, in two-story structures of masonry or concrete construction, provided the following requirements are met:
    2.1. Story-to-story wall heights shall not exceed 12 feet (3658 mm).
    2.2. Diaphragms shall not be designed to transmit lateral forces by rotation. Diaphragms shall not cantilever past the outermost supporting shear wall.
    2.3. Combined deflections of diaphragms and shear walls shall not permit story drift of supported masonry or concrete walls to exceed the limit of Section 1617.3.
    2.4. Wood structural panel sheathing in diaphragms shall have unsupported edges blocked. Wood structural panel sheathing for both stories of shear walls shall have unsupported edges blocked and, for the lower story, shall have a minimum thickness of $^{15}/_{32}$ inch (11.9 mm).
    2.5. There shall be no out-of-plane horizontal offsets between the first and second stories of wood structural panel shear walls.

2305.1.6 Wood members resisting seismic forces from non-structural concrete or masonry. Wood members shall be permitted to resist horizontal seismic forces from non-structural concrete, masonry veneer, concrete floors or chimneys.

8. Background information on amendment. Neither of these amendments is meant to change the intent behind the code provisions, but to clarify their application. Both were approved for the 2006 IBC in the last code cycle.

The Seattle chapter of SEAW recommended early adoption of ICC code changes S67-03/04 and S68-03/04. They are clarifications that limitations on wood construction resisting horizontal seismic forces apply when wood systems are resisting seismic forces contributed by masonry or concrete walls and not other types of masonry or concrete construction such as masonry veneer and concrete floors. The amendments to exceptions one and two clarify that, for cases where horizontal seismic forces are caused by masonry veneer and/or concrete floors, elements of the wood lateral force resisting system can be designed using standard engineering methods.

Section 2305 is meant to apply to wood buildings designed either by using allowable stress design in accordance with the National Design Specification for Wood Construction or strength design in accordance with ASCE/AF&PA 16. In either of these

design methods, the seismic forces resisted by the lateral force resisting system is taken into account in the design.

Amendment #28

7. Proposed Code Amendment

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TABLE 2306.4.1
ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL SHEAR WALLS WITH FRAMING OF DOUGLAS-FIR-LARCH, OR SOUTHERN PINE[a] FOR WIND OR SEISMIC LOADING[b, h, i, j]

PANEL GRADE	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	PANELS APPLIED DIRECT TO FRAMING					PANELS APPLIED OVER 1/2" OR 5/8" GYPSUM SHEATHING				
			NAIL (common or galvanized box) or staple size[k]	Fastener spacing at panel edges (inches)				NAIL (common or galvanized box) or staple size[k]	Fastener spacing at panel edges (inches)			
				6	4	3	2[e]		6	4	3	2[e]

No amendments to table or to footnotes a–g, j or k.

h. Where panels are applied on both faces of a wall and nail spacing is less than 6 inches o.c. on either side, panel joints shall be offset to fall on different framing members. Or framing shall be 3 inch nominal or thicker and nails on each side shall be staggered.
i. In Seismic Design Category D, E or F, where shear design values exceed 490 pounds per lineal foot (LRFD) or 350 pounds per lineal foot (ASD) all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch nominal member, or 2 two-inch nominal members fastened together in accordance with Section 2307.1 (LRFD) or Section 2306.1 (ASD) to transfer the design shear value between framing members. Plywood joint and sill plate nailing shall be staggered in all cases. See Section 2305.3.10 for sill plate size and anchorage requirements.

8. Background information on amendment. This amendment is a pre-approved code alternate. The detail has been tested by APA–the Engineered Wood Association. The testing showed that this detail provides equal performance to the single 3-inch nominal member. This change was approved for the 2006 IBC during the last code cycle in code change S77-03/04.